



Attorney Docket No. AE97/151US

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES
(B&W Docket No. 003259.84946)

Appellants: Forbert et al. Paper No: 21
U.S. Serial No.: 09/447,030 Group Art Unit: 1754
Filed: November 22, 1999 Examiner: Nguyen, N.M.
Title: Method for Producing Substantially Globular Lyogels and Aerogels

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Commissioner for Patents
P.O. Box. 1450
Alexandria, Virginia 22313-1450

REPLY BRIEF UNDER 37 C.F.R. § 1.193(b)(1)

Dear Sir:

This Reply Brief is filed in response to the Examiner's Answer mailed on May 6, 2003 in the above-referenced proceeding.

Appellants appeal the decision of Examiner Nguyen in the final Office Action mailed on June 14, 2002, and reaffirmed in the Advisory Action mailed on September 24, 2002, finally rejecting each of claims 13-24.

A Certificate of Express Mail and a Return Receipt Postcard are also enclosed with this Reply Brief.

Appellants respectfully request entry of the following remarks.

REMARKS

I. Issue 1: Each of Claims 13-24 Meet the Definiteness Requirement of 35 U.S.C. § 112

Claims 13-24 are improperly rejected under § 112, second paragraph for the use in claim 13 of the terms “perceptibly” and “perceptibly dissolve in the lyosol.” Claim 13 recites that the moving medium that flows substantially against the direction of gravity and into which the lyosol is introduced in order to form a lyogel, does not perceptibly dissolve in the lyosol.

The Examiner, on page 4 of the Examiner’s answer, asserts that it is unclear what is required by “perceptibly.” The Examiner also asserts (see page 4, third full paragraph, of the Examiner’s answer) that if the phrase “does not perceptibly dissolve” has relative meaning, then claim 13 is indefinite. Appellants respectfully disagree.

One skilled in the art, in performing the process recited in claim 13, would understand the meaning of the term perceptibly. For example, the person of ordinary skill in the art, in performing the process defined by claim 13, would use a medium that does not perceptibly dissolve in the lyosol, *i.e.*, a medium that does not dissolve to an extent or degree distinctly discernible, noticeable or measurable.

In addition, even if the term “perceptibly” does have relative meaning, a term having relative meaning is not indefinite *per se*. The fact that claim language may include terms of degree does not automatically render the claim indefinite under 35 U.S.C. § 112, second paragraph. See *Seattle Box Co. v. Industrial Crating & Packaging, Inc.*, 731 F.2d 818, 221, USPQ 568 (Fed. Cir. 1984). Acceptability depends on whether one skilled in the art, in view of the specification would understand what is claimed. As discussed above, the person of ordinary skill in the art, in view of the specification, would understand the meaning of the term perceptibly.

Support for the term “perceptibly” can be found throughout the specification and claims as originally filed. For example, PCT/EP98/03161, which is the parent application of the instant application, recites the phrase “das sich in dem Lyosol nicht merklich löst.” See page 7, lines 1-2, and claim 1 of PCT/EP98/03161. This phrase can be translated to mean “the said medium being not

noticeable in the lyosol” or “the said medium being not perceptible in the lyosol.” Thus, the specification as originally filed fully supports the terms “perceptibly” and “does not perceptibly dissolve in the lyosol.”

In addition, Applicants are not required to provide one-to-one correspondence between the terms of the specification and the terms used in the claims. That is, the fact that a term used in a claim has no exact corresponding term in the specification does not mean that the term or phrase is indefinite. There simply is no requirement that the terms in the claims must match those used in the specification.

Accordingly, because the meaning of the term “perceptibly” is understood by the person of ordinary skill in the art, the term is definite under 35 U.S.C. § 112, second paragraph.

II. Issue 2: Claims 13-14 and 16-19 are Patentable Over Bergna et al. together with Grant and Hackh’s Chemical Dictionary and Chemical Engineer’s Handbook

Claims 13-14 and 16-19 are patentable under § 102(b) over Bergna et al. (US 4,131,542) together with Grant and Hackh’s Chemical Dictionary (page 258) and Chemical Engineer’s Handbook (pp. 20-58 to 20-63). Claim 13, from which claims 14 and 16-19 depend, recites a method for producing substantially globular lyogels in which the gel forming components are mixed to produce a lyosol, after which the lyosol, in order to form a lyogel, is introduced into a moving medium which flows substantially against the direction of the force of gravity and which does not perceptibly dissolve in the lyosol.

Bergna teaches that its sol is dried before any substantial increase in viscosity has occurred (Col. 4, lines 31-35). Bergna teaches at Column 4, lines 41-43 that spray drying is used to achieve rapid drying of the sol. That is, Bergna takes “dried sol” from the spray-drying apparatus. Thus, Bergna uses spray drying to dry a sol and removes the dried sol from the apparatus. Accordingly, the process of Bergna avoids gelling.

The Examiner asserts that U.S. Patent No. 3,301,635 (the ‘635 patent) is not relied on to support any rejection. The Examiner has misinterpreted Appellants remarks with respect to the ‘635

patent. Bergna 4,131,542 (the '542 patent) expressly recites at Column 1, lines 45-47 that "The present process involves spray-drying an aqueous silica sol in a manner similar to that disclosed in U.S. Pat. No. 3,301,635." Thus, the '542 patent acknowledges that the process of the '542 patent and the process of the '635 patent are similar.

The '635 patent states at Column 7, lines 70-71 that "Freeze-drying is another method of converting a silica sol to a dry powder." The '635 patent goes on to state at Column 7, lines 72-74 that "In this method the sol is cooled to a low temperature and then frozen very fast as a thin film; thereafter the frozen water is sublimed." The '635 patent further states at Column 8, lines 15-16 that the powder is made by freeze-drying a deionized sol. Accordingly, the '635 patent teaches drying of a sol to form a powder and does not teach formation of a gel using a moving medium that flows substantially against the direction of the force of gravity and which does not perceptibly dissolve in the lyosol. Because the '542 patent expressly states that the process of the '542 patent is similar to the process of the '635 patent, and because the '635 patent teaches a process of drying a sol to form a powder, the '542 patent does not anticipate claims 13, 14 and 16-19.

The Examiner asserts (see page 12, second full paragraph, of the Examiner's answer) that the PMG particles taught by Bergna meet the definition of a gel. Appellants respectfully disagree.

As discussed above and discussed in the Appeal Brief, Bergna '542 dries a sol. A sol is not a gel. In addition, because Bergna '542 expressly states that "the sol is dried to PMG before any substantial increase in viscosity has occurred" (Column 4, lines 32-33), the PMG is not a gel.

With reference to claims 14 and 16-19, the reasons for the patentability of claims 14 and 16-19 over Bergna together with Grant and Hackh's Chemical Dictionary and Chemical Engineer's Handbook were provided in the discussion of Issue 2 in the Appeal Brief (pages 5-8 of the Appeal Brief), which discussion is incorporated herein by reference.

III. Issue 3: Claims 13, 14 and 16-22 are Patentable Over Bergna et al. together with Grant and Hackh's Chemical Dictionary and optionally in view of the Chemical Engineer's Handbook

Claims 13, 14 and 16-22 are patentable under § 103(a) over Bergna et al. taken together with

Grant and Hackh's Chemical Dictionary and optionally in view of the Chemical Engineer's Handbook.

The discussion above in reference to claim 13 and Issue 2 is incorporated here by reference. In brief, Bergna teaches avoidance of gelling, whereas in claims 13, 14 and 16-22, a lyosol, in order to form a lyogel, is introduced into a moving medium which flows substantially against the direction of the force of gravity and which does not perceptibly dissolve in the lyosol. Thus, Bergna teaches away from the claimed method, and taken together with Grant and Hackh's Chemical Dictionary and optionally in view of the Chemical Engineer's Handbook fails to disclose, teach or suggest the subject matter of claims 13, 14 and 16-22. Accordingly, the rejection is improper.

The Examiner (on page 6, fourth and fifth full paragraph of the Examiner's answer) acknowledges that Bergna does not disclose how the lyosol is formed. However, the Examiner provides no weight to the method of making the starting material of instant claims 13, 14 and 16-22. Appellants disagree with the Examiner.

Claim limitations may not be ignored to establish an obviousness rejection. That is, the Examiner cannot establish obviousness by ignoring elements expressly recited in a claim. Because Bergna admittedly fails to teach or suggest formation of a lyosol in the manner recited in claims 13, 14 and 16-22, Bergna does not render any of claims 13, 14 and 16-22 obvious.

Because each of claims 14 and 16-22 depends directly or indirectly from claim 13, claims 14 and 16-22 are also patentable over Bergna taken together with Grant and Hackh's Chemical Dictionary and optionally in view of the Chemical Engineer's Handbook. Further, additional reasons for the patentability of claims 14 and 16-22 over Bergna taken together with Grant and Hackh's Chemical Dictionary and optionally in view of the Chemical Engineer's Handbook were provided in the discussion of Issue 3 in the Appeal Brief (pages 8-10 of the Appeal Brief), which discussion is incorporated herein by reference.

IV. Issue 4: Claims 13-24 are Patentable over Marisic in view of Fernholz and Optionally in view of Mielke

Claims 13-24 are patentable under § 103(a) over Marisic (US 2,384,946) in view of Fernholz (US 3,939,199) and optionally in view of Mielke (US 5,656,195). Claims 13-24 are not obvious over Marisic in view of Fernholz and/or Mielke, because these citations fail to teach or suggest all the elements of the claimed subject matter.

The Examiner asserts (Issue 4, second full paragraph, on page 14 of the Examiner's answer) that not mechanically disturbed does not imply that the fluid medium is not moving. Appellants disagree with the Examiner.

Marisic expressly teaches: "it is essential ... that the [hydro]sol be not mechanically disturbed during the time of setting." See page 2, right column, lines 1-5. Consistent with this contrary teaching, the fluid medium filling most of Marisic's tank 11 does not flow substantially against the direction of the force of gravity. See page 2, right column, lines 41-56. Also, in a moving fluid medium, the hydrosol would be mechanically disturbed. For example, Marisic teaches that gas bubbles generated during evaporation of water from the sol should be avoided because the gas bubbles will mechanically disturb the gel. See right column, lines 5-9 on page 2. If gas bubbles (*i.e.*, air) will mechanically disturb the gel, then a moving medium, such as air, for example, will also mechanically disturb the gel.

In stark contrast, claim 13 recites mixing gel forming components to produce a lyosol, after which the lyosol, in order to form a lyogel, is introduced into a moving medium which flows substantially against the direction of the force of gravity and which does not perceptibly dissolve in the lyosol. Thus, Marisic explicitly teaches away from the method of claim 13.

The Examiner further asserts (lines 2-3 on page 15 of the Examiner's answer) that the phrase "not mechanically disturbed" probably excludes the use of physical means, such as an agitator or baffle. Appellants disagree with the Examiner.

The Examiner has not provided any extrinsic evidence that supports the Examiner's conclusion that the phrase "not mechanically disturbed" means exclusion of physical means. If the

Examiner had wished to rely on such extrinsic evidence, such evidence should have been provided when prosecution was open. Because no such evidence was provided, the Examiner cannot properly assert that “not mechanically disturbed” means exclusion of physical means.

The Examiner also asserts (see page 15, fourth full paragraph of the Examiner’s answer) that Marisic and Fernholz are combinable because they are either in the field of applicant’s endeavor, or reasonably pertinent to the particular problem with which the invention was concerned. The Examiner asserts (page 15, fourth full paragraph of the Examiner’s answer) that Marisic “concerns about a structurally strong pellet by not mechanically disturbed the sol during the time of setting” and that Fernholz “concerns about avoiding damage of the gelled and still soft particles when they being sprayed dried by conducting the spray drying method.” Appellants disagree with the Examiner.

Marisic and Fernholz are not in the field of applicant’s endeavor. Marisic is not within the field of applicant’s endeavor, because Marisic is directed to formation of a hydrogel without mechanically disturbing a hydrosol. Fernholz is not within the field of applicant’s endeavor, because Fernholz is directed to particles without pores as a support for a catalyst to oxyacylate olefins in the gaseous phase. Accordingly, neither Marisic nor Fernholz is within the field of applicant’s endeavor.

Marisic and Fernholz are not concerned with the particular problem with which the present invention is concerned. In particular, claim 13 of the present invention is directed to producing substantially globular lyogels in which the gel forming components are mixed together to produce a lyosol, after which the lyosol, in order to form a lyogel, is introduced into a moving medium which flows substantially against the direction of gravity and which does not perceptibly dissolve in the lyosol. Neither Marisic nor Fernholz are concerned with producing substantially globular lyogels. In addition, neither Marisic nor Fernholz introduce a lyosol, in order to form a lyogel, into a moving medium which flows substantially against the direction of gravity and which does not perceptibly dissolve in the lyosol. Accordingly, Marisic and Fernholz are improperly applied to the present claims.

In addition, it is well established that differences between the purpose of the invention and the purpose of the citation are important in determining whether the citation is reasonably pertinent.

See *In re Clay*, 966 F.2d 656, 23 USPQ2d 1058 (Fed. Cir. 1992). The purpose of Marisic is to form a hydrogel without mechanically disturbing a hydrosol. The purpose of Fernholz is to provide particles without pores as a support for a catalyst to oxyacylate olefins in the gaseous phase. The purpose of Marisic and Fernholz are in stark contrast to the purpose of claim 13 of the present invention, which is to introduce a lyosol, in order to form a lyogel, into a moving medium which flows substantially against the direction of gravity and which does not perceptibly dissolve in the lyosol. Accordingly, Marisic and Fernholz are not reasonably pertinent to claims 13-24 and cannot be used, either alone or in combination with any other citation, to support a rejection of the claims.

With reference to claim 23, the Examiner asserts that Mielke can be applied to teach that "the silica aerogel is desired in the art and can be produced from a silica hydrogel." Appellants disagree with the Examiner.

Even assuming *arguendo* that Mielke does teach that silica aerogel is desired in the art and can be produced from a silica hydrogel, Mielke, either alone or in combination with any other citation, is still deficient because there is no teaching or suggestion in Mielke to introduce a lyosol, in order to form a lyogel, into a moving medium which does not perceptibly dissolve in the lyosol. Accordingly, the rejection is improper.

The reasons for the patentability of claims 14-24 over Marisic in view of Fernholz and optionally in view of Mielke were provided in the discussion of Issue 4 in the Appeal Brief (pages 10-13 of the Appeal Brief), which discussion is incorporated herein by reference.

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V. Conclusion

Appellants respectfully request reversal of the Examiner and allowance of all pending claims.

Respectfully submitted,
Forbert et al.

7 July 2003
Dated

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